ABSTRACT

A seven level three phase multilevel inverter is a power electronic converter designed to generate a desired AC voltage from a variety of DC voltages. Several multilevel inverter topologies have been developed, most of these circuits are the combinations of two of the basic multilevel topologies. To drive the motor with minimum harmonic distortion, a cascaded multilevel inverter MLI is used. By increasing the number of levels, THD will be reduced. It is obvious that a low THD output voltage is desirable, but increasing the number of levels necessitates more hardware and complicates the control. Multilevel phase-shifted pulse-width modulation method is used to achieve balanced power distribution among the power cells. A new method to balance the midpoint capacitor voltage in each cell is developed. The control method is straight forward, the motor current has a low total harmonic distortion, and the machine drive circuit is a cascaded multilevel inverter. This project discuss the modified Multilevel Inverter topology, which serves as an interface between the PV Panel and the Drive system. The main objective of this project is to reduce ripple in output and current with minimum harmonic distortion. This configuration is studied and simulated in MATLAB/SIMULINK. This simulation is developed into prototype model. It comprises of cascaded MLI with the BLDC motor. The drive system provides a variable output voltage and frequency for controlling the speed and torque of the electric motors. In which it produces clear 7 voltage levels with benefits of reduce in voltage stress and harmonic reduction. It is developed to reduce the complexity and cost of the circuit design. A PWM Technique is carried out to provide a significant reduction in switching voltages across the power switches, allowing them for a reduction in switching power losses. Simulation and experimental results are presented to demonstrate the effectiveness of the proposed topology systems.